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SEQUENCE LISTING

<110> CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE  
UNIVERSITE HENRI POINCARÉ DE NANCY

<120> NEW PHOSPHATE-BINDING PROTEIN, PHARMACEUTICAL COMPOSITIONS  
CONTAINING IT, AND USES THEREOF

<130> WOB 03 BU CNR HPBP

<150> FR 03/12729  
<151> 2004-10-30

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<170> PatentIn version 3.1

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<213> Homo sapiens

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 Cys Gly Val Phe Ser Gly Arg Ile Ala Xaa Trp Ser Gly Ile Thr Gly  
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 Gln Pro Gly Thr Phe Ala Val Thr Thr Val Phe Ala Asn Ser Tyr Ser  
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 Leu Gly Leu Ser Pro Leu Ala Gly Ala Val Ala Ala Ile Gly Ser Val  
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 Gly Val Met Ala Ala Asp Asn Asp Val Thr Thr Ala Gln Gly Arg Ile  
 195 200 205  
 Thr Tyr Ile Ser Pro Asp Phe Ala Ala Pro Xaa Leu Ala Gly Leu Xaa  
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 Asp Ala Thr Lys Val Ala Arg Thr Gly Lys Gly Ser Ser Ser Gly Gly  
 225 230 235 240  
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<213> Homo sapiens

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Gly Lys Leu Ile Gln Val Pro Ser Val Ala Thr Ser Val Ala Ile Pro  
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Phe Arg Lys Ala Gly Ala Asn Ala Val Asp Leu Ser Val Lys Glu Leu  
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Cys Gly Val Phe Ser Gly Arg Ile Ala Asp Trp Ser Gly Ile Thr Gly  
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Gln Pro Gly Thr Phe Ala Val Thr Thr Val Phe Ala Asn Ser Tyr Ser  
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Leu Gly Leu Ser Pro Leu Ala Gly Ala Val Ala Ala Ile Gly Ser Val  
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Thr Tyr Ile Ser Pro Asp Phe Ala Ala Pro Thr Leu Ala Gly Leu Asp  
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Asp Ala Thr Lys Val Ala Arg Thr Gly Lys Gly Ser Ser Ser Gly Gly  
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Gly Ala Glu Gly Lys Ser Pro Ala Ala Ala Asn Val Ser Ala Ala Ile  
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 35 40 45  
 Thr Asn Thr Thr Lys Asp Val His Trp Ala Gly Ser Asp Ser Lys Leu  
 50 55 60  
 Thr Ala Ser Gln Leu Ala Thr Tyr Ala Ala Asn Lys Gln Pro Gly Trp  
 65 70 75 80  
 Gly Lys Leu Ile Glu Val Pro Ser Val Ala Thr Ser Val Ala Ile Pro  
 85 90 95  
 Phe Arg Lys Ala Gly Gly Asn Ala Val Asp Leu Ser Val Lys Glu Leu  
 100 105 110  
 Cys Gly Val Phe Ser Gly Arg Ile Ala Asn Trp Ser Gly Ile Thr Gly  
 115 120 125  
 Ala Gly Arg Ser Gly Pro Ile Gln Val Val Tyr Arg Ala Glu Val Ser  
 130 135 140

Gly Thr Thr Glu Leu Phe Thr Arg Phe Leu Asn Ala Lys Cys Thr Thr  
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 Gln Pro Gly Thr Phe Ala Val Thr Thr Val Phe Ala Asn Ser Tyr Ser  
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 Leu Gly Leu Ser Pro Leu Ala Gly Ala Val Ala Ala Ile Gly Ser Val  
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 Gly Val Met Ala Ala Asp Asn Asp Val Thr Thr Ala Gln Gly Arg Ile  
 195 200 205  
 Thr Tyr Ile Ser Pro Asp Phe Ala Ala Pro Ser Leu Ala Gly Leu Asn  
 210 215 220  
 Asp Ala Thr Lys Val Ala Arg Thr Gly Lys Gly Ser Ser Ser Gly Gly  
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 Trp Thr Pro Val Phe Gly Ala Val Thr Gly Gly Gly Val Val Ala Tyr  
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 Glu Val Gln Pro Val Glu Leu Pro Asn Cys Asn Leu Val Lys Gly Ile  
 35 40 45

Glu Thr Gly Ser Glu Asp Met Glu Ile Leu Pro Asn Gly Leu Ala Phe  
 50 55 60  
 Ile Ser Ser Gly Leu Lys Tyr Pro Gly Ile Lys Ser Phe Asn Pro Asn  
 65 70 75 80  
 Ser Pro Gly Lys Ile Leu Leu Met Asp Leu Asn Glu Glu Asp Pro Thr  
 85 90 95  
 Val Leu Glu Leu Gly Ile Thr Gly Ser Lys Phe Asp Val Ser Ser Phe  
 100 105 110  
 Asn Pro His Gly Ile Ser Thr Phe Thr Asp Glu Asp Asn Ala Met Tyr  
 115 120 125  
 Leu Leu Val Val Asn His Pro Asp Ala Lys Ser Thr Val Glu Leu Phe  
 130 135 140  
 Lys Phe Gln Glu Glu Glu Lys Ser Leu Leu His Leu Lys Thr Ile Arg  
 145 150 155 160  
 His Lys Leu Leu Pro Asn Leu Asn Asp Ile Val Ala Val Gly Pro Glu  
 165 170 175  
 His Phe Tyr Gly Thr Asn Asp His Tyr Phe Leu Asp Pro Tyr Leu Gln  
 180 185 190  
 Ser Trp Glu Met Tyr Leu Gly Leu Ala Trp Ser Tyr Val Val Tyr Tyr  
 195 200 205  
 Ser Pro Ser Glu Val Arg Val Val Ala Glu Gly Phe Asp Phe Ala Asn  
 210 215 220  
 Gly Ile Asn Ile Ser Pro Asp Gly Lys Tyr Val Tyr Ile Ala Glu Leu  
 225 230 235 240  
 Leu Ala His Lys Ile His Val Tyr Glu Lys His Ala Asn Trp Thr Leu  
 245 250 255  
 Thr Pro Leu Lys Ser Leu Asp Phe Asn Thr Leu Val Asp Asn Ile Ser  
 260 265 270  
 Val Asp Pro Glu Thr Gly Asp Leu Trp Val Gly Cys His Pro Asn Gly  
 275 280 285  
 Met Lys Ile Phe Phe Tyr Asp Ser Glu Asn Pro Pro Ala Ser Glu Val  
 290 295 300  
 Leu Arg Ile Gln Asn Ile Leu Thr Glu Glu Pro Lys Val Thr Gln Val  
 305 310 315 320  
 Tyr Ala Glu Asn Gly Thr Val Leu Gln Gly Ser Thr Val Ala Ser Val  
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<210> 5  
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 <213> Homo sapiens

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Glu	Val	Glu	Ser	Val	Asp	Leu	Pro	His	Cys	His	Leu	Ile	Lys	Gly	Ile	35	40	45	
Glu	Ala	Gly	Ser	Glu	Asp	Ile	Asp	Ile	Leu	Pro	Asn	Gly	Leu	Ala	Phe	50	55	60	
Phe	Ser	Val	Gly	Leu	Lys	Phe	Pro	Gly	Leu	His	Ser	Phe	Ala	Pro	Asp	65	70	75	80
Lys	Pro	Gly	Gly	Ile	Leu	Met	Met	Asp	Leu	Lys	Glu	Glu	Lys	Pro	Arg	85	90	95	
Ala	Arg	Glu	Leu	Arg	Ile	Ser	Arg	Gly	Phe	Asp	Leu	Ala	Ser	Phe	Asn	100	105	110	
Pro	His	Gly	Ile	Ser	Thr	Phe	Ile	Asp	Asn	Asp	Asp	Thr	Val	Tyr	Leu	115	120	125	
Phe	Val	Val	Asn	His	Pro	Glu	Phe	Lys	Asn	Thr	Val	Glu	Ile	Phe	Lys	130	135	140	
Phe	Glu	Glu	Ala	Glu	Asn	Ser	Leu	Leu	His	Leu	Lys	Thr	Val	Lys	His	145	150	155	160
Glu	Leu	Leu	Pro	Ser	Val	Asn	Asp	Ile	Thr	Ala	Val	Gly	Pro	Ala	His	165	170	175	
Phe	Tyr	Ala	Thr	Asn	Asp	His	Tyr	Phe	Ser	Asp	Pro	Phe	Leu	Lys	Tyr	180	185	190	
Leu	Glu	Thr	Tyr	Leu	Asn	Leu	His	Trp	Ala	Asn	Val	Val	Tyr	Tyr	Ser	195	200	205	
Pro	Asn	Glu	Val	Lys	Val	Val	Ala	Glu	Gly	Phe	Asp	Ser	Ala	Asn	Gly	210	215	220	
Ile	Asn	Ile	Ser	Pro	Asp	Asp	Lys	Tyr	Ile	Tyr	Val	Ala	Asp	Ile	Leu	225	230	235	240
Ala	His	Glu	Ile	His	Val	Leu	Glu	Lys	His	Thr	Asn	Met	Asn	Leu	Thr	245	250	255	
Gln	Leu	Lys	Val	Leu	Glu	Leu	Asp	Thr	Leu	Val	Asp	Asn	Leu	Ser	Ile	260	265	270	
Asp	Pro	Ser	Ser	Gly	Asp	Ile	Trp	Val	Gly	Cys	His	Pro	Asn	Gly	Gln	275	280	285	



Lys Leu Phe Val Tyr Asp Pro Asn Asn Pro Pro Ser Ser Glu Val Leu  
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 Arg Ile Gln Asn Ile Leu Cys Glu Lys Pro Thr Val Thr Thr Val Tyr  
 305 310 315 320  
 Ala Asn Asn Gly Ser Val Leu Gln Gly Ser Ser Val Ala Ser Val Tyr  
 325 330 335  
 Asp Gly Lys Leu Leu Ile Gly Thr Leu Tyr His Arg Ala Leu Tyr Cys  
 340 345 350  
 Glu Leu

<210> 6  
 <211> 354  
 <212> PRT  
 <213> Homo sapiens

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 Glu Val Glu Pro Val Glu Pro Glu Asn Cys His Leu Ile Glu Glu Leu  
 35 40 45  
 Glu Ser Gly Ser Glu Asp Ile Asp Ile Leu Pro Ser Gly Leu Ala Phe  
 50 55 60  
 Ile Ser Ser Gly Leu Lys Tyr Pro Gly Met Pro Asn Phe Ala Pro Asp  
 65 70 75 80  
 Glu Pro Gly Lys Ile Phe Leu Met Asp Leu Asn Glu Gln Asn Pro Arg  
 85 90 95  
 Ala Gln Ala Leu Glu Ile Ser Gly Gly Phe Asp Lys Glu Leu Phe Asn  
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 Pro His Gly Ile Ser Ile Phe Ile Asp Lys Asp Asn Thr Val Tyr Leu  
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 Tyr Val Val Asn His Pro His Met Lys Ser Thr Val Glu Ile Phe Lys  
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Pro Arg Glu Val Lys Val Val Ala Lys Gly Phe Cys Ser Ala Asn Gly  
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 225 230 235 240  
 Ala Lys Asn Ile His Ile Met Glu Lys His Asp Asn Trp Asp Leu Thr  
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 275 280 285  
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 100 105 110  
 Asn Pro His Gly Ile Ser Thr Phe Thr Asp Glu Asp Asn Ile Val Tyr  
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Leu Met Val Val Asn His Pro Asp Ser Lys Ser Thr Val Glu Leu Phe  
 130 135 140  
 Lys Phe Gln Glu Lys Glu Lys Ser Leu Leu His Leu Lys Thr Ile Arg  
 145 150 155 160  
 His Lys Leu Leu Pro Ser Val Asn Asp Ile Val Ala Val Gly Pro Glu  
 165 170 175  
 His Phe Tyr Ala Thr Asn Asp His Tyr Phe Ile Asp Pro Tyr Leu Lys  
 180 185 190  
 Ser Trp Glu Met His Leu Gly Leu Ala Trp Ser Phe Val Thr Tyr Tyr  
 195 200 205  
 Ser Pro Asn Asp Val Arg Val Val Ala Glu Gly Phe Asp Phe Ala Asn  
 210 215 220  
 Gly Ile Asn Ile Ser Pro Asp Gly Lys Tyr Val Tyr Ile Ala Glu Leu  
 225 230 235 240  
 Leu Ala His Lys Ile His Val Tyr Glu Lys His Ala Asn Trp Thr Leu  
 245 250 255  
 Thr Pro Leu Lys Ser Leu Asp Phe Asn Thr Leu Val Asp Asn Ile Ser  
 260 265 270  
 Val Asp Pro Val Thr Gly Asp Leu Trp Val Gly Cys His Pro Asn Gly  
 275 280 285  
 Met Arg Ile Phe Tyr Tyr Asp Pro Lys Asn Pro Pro Ala Ser Glu Val  
 290 295 300  
 Leu Arg Ile Gln Asp Ile Leu Ser Lys Glu Pro Lys Val Thr Val Ala  
 305 310 315 320  
 Tyr Ala Glu Asn Gly Thr Val Leu Gln Gly Ser Thr Val Ala Ala Val  
 325 330 335  
 Tyr Lys Gly Lys Met Leu Val Gly Thr Val Phe His Lys Ala Leu Tyr  
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 Cys Glu Leu Ser Gln Ala Asn  
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 35 40 45

Glu Ala Gly Ala Glu Asp Leu Glu Ile Leu Pro Asn Gly Leu Thr Phe  
 50 55 60  
 Phe Ser Thr Phe Leu Lys Tyr Pro Gly Ile Lys Ser Phe Asp Pro Ser  
 65 70 75 80  
 Lys Pro Gly Lys Ile Leu Leu Met Asp Leu Asn Glu Lys Glu Pro Ala  
 85 90 95  
 Val Ser Glu Leu Ala Ile Met Gly Asn Thr Leu Asp Met Ser Ser Phe  
 100 105 110  
 Asn Pro His Gly Ile Ser Thr Phe Ile Asp Glu Asp Asn Thr Val Tyr  
 115 120 125  
 Leu Leu Val Val Ser His Pro Asp Ser Ser Ser Thr Val Glu Val Phe  
 130 135 140  
 Lys Phe Gln Glu Glu Glu Arg Ser Leu Leu His Leu Lys Thr Ile Thr  
 145 150 155 160  
 His Glu Leu Leu Pro Ser Ile Asn Asp Ile Ala Ala Val Gly Pro Glu  
 165 170 175  
 Ser Phe Tyr Ala Thr Asn Asp His Tyr Phe Ala Asp Pro Tyr Leu Arg  
 180 185 190  
 Ser Trp Glu Met Tyr Leu Gly Leu Ser Trp Ser Asn Val Val Tyr Tyr  
 195 200 205  
 Ser Pro Asp Lys Val Arg Val Val Ala Asp Gly Phe Asp Phe Ala Asn  
 210 215 220  
 Gly Ile Gly Ile Ser Leu Asp Gly Lys Tyr Val Tyr Ile Ala Glu Leu  
 225 230 235 240  
 Leu Ala His Lys Ile His Val Tyr Glu Lys His Ala Asn Trp Thr Leu  
 245 250 255  
 Thr Pro Leu Lys Val Leu Ser Phe Asp Thr Leu Val Asp Asn Ile Ser  
 260 265 270  
 Val Asp Pro Val Thr Gly Asp Leu Trp Val Gly Cys His Pro Asn Gly  
 275 280 285  
 Met Arg Ile Phe Phe Tyr Asp Ser Glu Asn Pro Pro Gly Ser Glu Val  
 290 295 300  
 Leu Arg Ile Gln Ser Ile Leu Ser Glu Asp Pro Lys Val Thr Val Val  
 305 310 315 320  
 Tyr Ala Glu Asn Gly Thr Val Leu Gln Gly Thr Thr Val Ala Ala Val  
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 340 345 350  
 Cys Tyr Leu  
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 <213> Mus musculus

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 35 40 45  
 Glu Thr Gly Ala Glu Asp Leu Glu Ile Leu Pro Asn Gly Leu Thr Phe  
 50 55 60  
 Phe Ser Thr Gly Leu Lys Tyr Pro Gly Ile Lys Ser Phe Asp Pro Ser  
 65 70 75 80  
 Lys Pro Gly Lys Ile Leu Leu Met Asp Leu Asn Lys Lys Glu Pro Ala  
 85 90 95  
 Val Ser Glu Leu Glu Ile Ile Gly Asn Thr Leu Asp Ile Ser Ser Phe  
 100 105 110  
 Asn Pro His Gly Ile Ser Thr Phe Thr Asp Glu Asp Asn Thr Val Tyr  
 115 120 125  
 Leu Leu Val Val Asn His Pro Asp Ser Ser Ser Thr Val Glu Val Phe  
 130 135 140  
 Lys Phe Gln Glu Glu Glu Arg Ser Leu Leu His Leu Lys Thr Ile Thr  
 145 150 155 160  
 His Glu Leu Leu Pro Ser Ile Asn Asp Ile Ala Ala Ile Gly Pro Glu  
 165 170 175  
 Ser Phe Tyr Ala Thr Asn Asp His Tyr Phe Ala Asp Pro Tyr Leu Arg  
 180 185 190  
 Ser Trp Glu Met Tyr Leu Gly Leu Ser Trp Ser Asn Val Val Tyr Tyr  
 195 200 205  
 Ser Pro Asp Lys Val Gln Val Val Ala Glu Gly Phe Asp Phe Ala Asn  
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 Gly Ile Gly Ile Ser Leu Asp Gly Lys Tyr Val Tyr Ile Ala Glu Leu  
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 245 250 255  
 Thr Pro Leu Lys Val Leu Asn Phe Asp Thr Leu Val Asp Asn Ile Ser  
 260 265 270  
 Val Asp Pro Val Thr Gly Asp Leu Trp Val Gly Cys His Pro Asn Gly  
 275 280 285

Met Arg Ile Phe Phe Tyr Asp Ala Glu Asn Pro Pro Gly Ser Glu Val  
290 295 300

Leu Arg Ile Gln Asn Ile Leu Ser Glu Asp Pro Lys Ile Thr Val Val  
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Tyr Ala Glu Asn Gly Thr Val Leu Gln Gly Thr Thr Val Ala Ser Val  
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35 40 45

Glu Thr Gly Ala Glu Asp Ile Asp Ile Leu Pro Asn Gly Leu Ala Phe  
50 55 60

Phe Ser Val Gly Leu Lys Phe Pro Gly Leu His Ser Phe Ala Pro Asp  
65 70 75 80

Lys Pro Gly Gly Ile Leu Met Met Asp Leu Asp Glu Arg Pro Pro Ser  
85 90 95

Leu Glu Glu Leu Arg Val Ser Trp Gly Phe Asp Leu Ala Ser Phe Asn  
100 105 110

Pro His Gly Ile Ser Thr Phe Ile Asp Asp Asp Asp Thr Val Tyr Leu  
115 120 125

Phe Val Val Asn His Pro Gln Phe Ser Asn Thr Val Glu Ile Phe Lys  
130 135 140

Phe Gln Glu Ala Glu Asn Ser Leu Leu His Leu Lys Thr Ile Lys His  
145 150 155 160

Glu Leu Leu Pro Ser Val Asn Asp Ile Ile Ala Val Gly Pro Ala His  
165 170 175

Phe Tyr Ala Thr Asn Asp His Tyr Phe Ser Asp Pro Phe Leu Lys Tyr  
180 185 190

Leu Glu Thr Tyr Leu Asn Leu His Trp Ala Asn Val Val Tyr Tyr Ser  
195 200 205

Pro Glu Glu Val Lys Leu Val Ala Glu Gly Phe Asp Ser Ala Asn Gly  
 210 215 220  
 Ile Asn Ile Ser Pro Asp Lys Lys Tyr Val Tyr Val Ala Asp Ile Leu  
 225 230 235 240  
 Ala His Glu Ile His Val Leu Glu Lys Gln Pro Asn Met Asn Leu Thr  
 245 250 255  
 Gln Leu Lys Val Leu Gln Leu Gly Thr Leu Val Asp Asn Leu Ser Ile  
 260 265 270  
 Asp Pro Ser Ser Gly Asp Ile Trp Val Gly Cys His Pro Asn Gly Gln  
 275 280 285  
 Arg Leu Phe Val Tyr His Pro Asn His Pro Pro Thr Ser Glu Val Leu  
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 Glu Leu

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 Glu Ile Lys Ala Thr Glu Pro Gln Asn Cys His Leu Ile Glu Gly Leu  
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 Glu Asn Gly Ser Glu Asp Ile Asp Ile Leu Pro Ser Gly Leu Ala Phe  
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 Lys Pro Gly Arg Ile Phe Leu Met Asp Leu Asn Glu Gln Asn Pro Glu  
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 Ala Gln Ala Leu Glu Ile Ser Gly Gly Leu Asp Gln Glu Ser Leu Asn  
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 Pro His Gly Ile Ser Thr Phe Ile Asp Lys Asp Asn Thr Ala Tyr Leu  
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Tyr Val Val Asn His Pro Asn Met Asp Ser Thr Val Glu Ile Phe Lys  
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 Phe Glu Glu Gln Gln Arg Ser Leu Ile His Leu Lys Thr Leu Lys His  
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 Glu Leu Leu Lys Ser Val Asn Asp Ile Val Val Leu Gly Pro Glu Gln  
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 Phe Tyr Ala Thr Arg Asp His Tyr Phe Thr Ser Tyr Phe Leu Val Leu  
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 Leu Glu Met Ile Leu Asp Pro His Trp Thr Ser Val Val Phe Tyr Ser  
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 Pro Lys Glu Val Lys Val Val Ala Gln Gly Phe Ser Ser Ala Asn Gly  
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 Ile Thr Val Ser Leu Asp Gln Lys Phe Val Tyr Val Ala Asp Val Thr  
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 Ala Lys Asn Ile His Ile Met Lys Lys His Asp Asn Trp Asp Leu Thr  
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 Pro Val Lys Val Ile Gln Leu Gly Thr Leu Val Asp Asn Leu Thr Val  
 260 265 270  
 Asp Pro Ala Thr Gly Asp Ile Leu Ala Gly Cys His Pro Asn Pro Met  
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 Lys Leu Leu Ile Tyr Asn Pro Glu Asp Pro Pro Gly Ser Glu Val Leu  
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 Arg Ile Gln Asp Ser Leu Ser Asp Lys Pro Arg Val Ser Thr Leu Tyr  
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 His Lys Arg Met Leu Ile Gly Thr Ile Phe His Lys Ala Leu Tyr Cys  
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 Asp Leu